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APPLICATION NUMBER	FILING DATE	FIRST NAMED APPLICANT	ATTY. DOCKET NO.
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EXAMINER: L 303.229US2

MM22/0202
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ART UNIT	PAPER NUMBER
PRENTY, M	15

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This is a communication from the examiner in charge of your application.
COMMISSIONER OF PATENTS AND TRADEMARKS

OFFICE ACTION SUMMARY

☑ Responsive to communication(s) filed on 12/6/99

☑ This action is **FINAL**.

☐ Since this application is in condition for allowance except for formal matters, **prosecution as to the merits is closed** in accordance with the practice under *Ex parte Quayle*, 1935 D.C. 11; 453 O.G. 213.

A shortened statutory period for response to this action is set to expire 3 month(s), or thirty days, whichever is longer, from the mailing date of this communication. Failure to respond within the period for response will cause the application to become abandoned. (35 U.S.C. § 133). Extensions of time may be obtained under the provisions of 37 CFR 1.136(a).

Disposition of Claims

☑ Claim(s) 11-14, 24-32 and 38-43 is/are pending in the application.
Of the above, claim(s) _____ is/are withdrawn from consideration.
☐ Claim(s) _____ is/are allowed.
☑ Claim(s) 11-14, 24-32 and 38-43 is/are rejected.
☐ Claim(s) _____ is/are objected to.
☐ Claim(s) _____ are subject to restriction or election requirement.

Application Papers

☐ See the attached Notice of Draftsperson's Patent Drawing Review, PTO-948.
☐ The drawing(s) filed on _____ is/are objected to by the Examiner.
☐ The proposed drawing correction, filed on _____ is ☐ approved ☐ disapproved.
☐ The specification is objected to by the Examiner.
☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. § 119

☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d).

☐ All ☐ Some* ☐ None of the CERTIFIED copies of the priority documents have been

☐ received.
☐ received in Application No. (Series Code/Serial Number) _____.
☐ received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

*Certified copies not received: _____.

☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e).

Attachment(s)

☐ Notice of Reference Cited, PTO-892
☐ Information Disclosure Statement(s), PTO-1449, Paper No(s). _____
☐ Interview Summary, PTO-413
☐ Notice of Draftperson's Patent Drawing Review, PTO-948
☐ Notice of Informal Patent Application, PTO-152

--SEE OFFICE ACTION ON THE FOLLOWING PAGES--

This Office Action is in response to the amendment filed December 6, 1999.

Claims 11, 12, 24, 25, 30 and 32 are rejected under 35 U.S.C. §103 as being unpatentable over Aronowitz et al. (United States Patent 5,296,386 already of record) together with Grider et al. (United States Patent 5,818,100 already of record). Specifically, the difference between Aronowitz et al. (see Aronowitz et al's Figure 1 disclosure in particular) and the set of rejected claims is the former's channel length is not disclosed while the latter's channel length is less than 7μm. Grider et al. teaches that channel lengths have been scaled down to 0.25μm (see Grider et al. at column 1, lines 22-37). It would have been obvious to one skilled in this art to form Aronowitz et al's channel length less than 7μm as evidenced by Grider et al.. Claims 11, 12, 24, 25, 30 and 32 are thus rejected under 35 U.S.C. §103 as being unpatentable over Aronowitz et al. together with Grider et al.

Claims 13, 26, 27 and 31 are rejected under 35 U.S.C. §103 as being unpatentable over Aronowitz et al. (United States Patent 5,296,386 already of record) together with Grider et al. (United States Patent 5,818,100 already of record) and Crabbe' et al. (United States Patent 5,821,577 already of record). Specifically, the difference between the obvious Aronowitz et al. / Grider et al. transistor and the transistor recited in the set of rejected claims is that the latter's SiGe channel thickness is unknown while the former's SiGe channel thickness is "approximately 100 to 1,000 angstroms" (claims 13, 26 and 31) or "approximately 300 angstroms" (claim 27). Crabbe' et al. discloses forming SiGe channels 100 to 500 angstroms thick (see column 6, lines 17-22). It would have been further obvious to one skilled in this art to make the obvious Aronowitz et al. / Grider et al. transistor's channel 100 to 500 angstroms thick as suggested by Crabbe' et al. Claims 13, 26, 27 and 31 are thus

rejected under 35 U.S.C. §103 as being unpatentable over Aronowitz et al. together with Grider et al. and Crabbe' et al.

Claims 11, 14, 24, 25, 28, 30 and 32 are rejected under 35 U.S.C. §103 as being unpatentable over Selvakumar et al. (United States Patent 5,426,069 already of record) together with Grider et al. (United States Patent 5,818,100 already of record). Specifically, the difference between Selvakumar et al. (see Selvakumar et al's Figures 1-7 disclosure in particular) and the set of rejected claims is the former's channel length is 7μm while the latter's channel length is less than 7μm. Grider et al. teaches that channel lengths have been scaled down to 0.25μm (see Grider et al. at column 1, lines 22-37). It would have been obvious to one skilled in this art to form Selvakumar et al's channel length less than 7μm as evidenced by Grider et al. Claims 11, 14, 24, 25, 28, 30 and 32 are thus rejected under 35 U.S.C. §103 as being unpatentable over Selvakumar et al. together with Grider et al.

Claims 13, 26, 27 and 31 are rejected under 35 U.S.C. §103 as being unpatentable over Selvakumar et al. (United States Patent 5,426,069 already of record) together with Grider et al. (United States Patent 5,818,100 already of record) and Crabbe' et al. (United States Patent 5,821,577 already of record). Specifically, the difference between the obvious Selvakumar et al. / Grider et al. transistor and the transistor recited in the set of rejected claims is that the latter's SiGe channel thickness is unknown while the former's SiGe channel thickness is "approximately 100 to 1,000 angstroms" (claims 13, 26 and 31) or "approximately 300 angstroms" (claim 27). Crabbe' et al. discloses forming SiGe channels 100 to 500 angstroms thick (see column 6, lines 17-22). It would have been further obvious to one skilled in this art to make the obvious Selvakumar et al. / Grider et al. transistor's channel 100 to 500

angstroms thick as suggested by Crabbe' et al. Claims 13, 26, 27 and 31 are thus rejected under 35 U.S.C. §103 as being unpatentable over Selvakumar et al. together with Grider et al. and Crabbe' et al.

Claim 29 is rejected under 35 U.S.C. §103 as being unpatentable over Selvakumar et al. (United States Patent 5,426,069 already of record) together with Grider et al. (United States Patent 5,818,100 already of record) and Aronowitz et al. (United States Patent 5,296,386 already of record). Specifically, the difference between the obvious Selvakumar et al. / Grider et al. transistor and claim 29's transistor is they are N-type and P-type, respectively. Aronowitz et al. teaches using SiGe in both N-type and P-type transistors (see Aronowitz et al's Abstract, for example). It would have been further obvious to one skilled in this art to form the obvious Selvakumar et al. / Grider et al. transistor P-type as suggested by Aronowitz et al.. Claim 29 is thus rejected under 35 U.S.C. §103 as being unpatentable over Selvakumar et al. together with Grider et al. and Aronowitz et al.

Newly presented claims 38, 40 and 41 are rejected under 35 U.S.C. §103 as being unpatentable over Selvakumar et al. (United States Patent 5,426,069 already of record) together with Grider et al. (United States Patent 5,818,100 already of record). Specifically, the difference between Selvakumar et al. (see Selvakumar et al's Figures 1-7 disclosure in particular) and the set of rejected claims is the former's channel length is 7μm while the latter's channel length is less than 7μm. Grider et al. teaches that channel lengths have been scaled down to 0.25μm (see Grider et al. at column 1, lines 22-37). It would have been obvious to one skilled in this art to form Selvakumar et al's channel length less than 7μm as evidenced by Grider et al. Claims 38, 40 and 41 are thus rejected under 35 U.S.C. §103 as being unpatentable over Selvakumar et

al. together with Grider et al.

Claims 39, 42 and 43 are rejected under 35 U.S.C. §103 as being unpatentable over Selvakumar et al. (United States Patent 5,426,069 already of record) together with Grider et al. (United States Patent 5,818,100 already of record) and Crabbe' et al. (United States Patent 5,821,577 already of record). Specifically, the difference between the obvious Selvakumar et al. / Grider et al. transistor and the transistor recited in the set of rejected claims is that the latter's SiGe channel thickness is unknown while the former's SiGe channel thickness is "approximately 100 to 1,000 angstroms" (claims 39 and 42) or "approximately 300 angstroms" (claim 43). Crabbe' et al. discloses forming SiGe channels 100 to 500 angstroms thick (see column 6, lines 17-22). It would have been further obvious to one skilled in this art to make the obvious Selvakumar et al. / Grider et al. transistor's channel 100 to 500 angstroms thick as suggested by Crabbe' et al.. Claims 39, 42 and 43 are thus rejected under 35 U.S.C. §103 as being unpatentable over Selvakumar et al. together with Grider et al. and Crabbe' et al.

The applicant's arguments with respect to the maintained rejection of claims 11, 12, 24, 25, 30 and 32 under 35 U.S.C. §103 as being unpatentable over Aronowitz et al. together with Grider et al. are not persuasive. First, the applicant's reliance on Aronowitz et al. at column 2, lines 21-28 is misplaced in view of Aronowitz et al. at column 2, lines 35-41. Furthermore, the applicant loses sight of Grider et al's "continued scaling down" background teaching at column 1, lines 22-37. Finally, the test for combining references is not what individual references themselves suggest but rather what the combination of disclosures taken as a whole would suggest to one of ordinary skill in the art. Applicant cannot show nonobviousness by attacking

references individually where the rejection is based on a combination of references. In re Keller, 642 F.2d 413, 208 USPQ 871 (CCPA 1981). In this regard, forming Aronowitz et al's channel length less than 7μm as taught by Grider et al. would not "change the principle of operation" of Aronowitz et al.

The applicant's arguments with respect to the maintained rejection of claims 13, 26, 27 and 31 under 35 U.S.C. §103 as being unpatentable over Aronowitz et al. together with Grider et al. and Crabbe et al. are not persuasive because they merely rely on its unpersuasive arguments with respect to the maintained rejection of claims 11, 12, 24, 25, 30 and 32 under 35 U.S.C. §103 as being obvious over Aronowitz et al. together with Grider et al.

The applicant's arguments with respect to the maintained rejection of claims 11, 14, 24, 25, 28, 30 and 32 under 35 U.S.C. §103 as being unpatentable over Selvakumar et al. together with Grider et al. are not persuasive. Again, the applicant loses sight of Grider et al's "continued scaling down" background teaching at column 1, lines 22-37. Again, the test for combining references is not what individual references themselves suggest but rather what the combination of disclosures taken as a whole would suggest to one of ordinary skill in the art. Applicant cannot show nonobviousness by attacking references individually where the rejection is based on a combination of references. In re Keller, 642 F.2d 413, 208 USPQ 871 (CCPA 1981). In this regard, changing Selvakumar et al's channel length from 7μm to less than 7μm as taught by Grider et al. would not "change the principle of operation" of Selvakumar et al.

The applicant's arguments with respect to the maintained rejection of claims 13, 26, 27 and 31 under 35 U.S.C. §103 as being unpatentable over Selvakumar et al.

together with Grider et al. and Crabbe et al. are not persuasive because they merely rely on its unpersuasive arguments with respect to the maintained rejection of claims 11, 14, 24, 25, 28, 30 and 32 under 35 U.S.C. §103 as being obvious over Selvakumar et al. together with Grider et al.

The applicant's arguments with respect to the maintained rejection of claim 29 under 35 U.S.C. §103 as being unpatentable over Selvakumar et al. together with Grider et al. and Aronowitz et al. are not persuasive because they merely rely on its unpersuasive arguments with respect to the maintained rejection of claims 11, 14, 24, 25, 28, 30 and 32 under 35 U.S.C. §103 as being obvious over Selvakumar et al. together with Grider et al.

Applicant's amendment necessitated the new grounds of rejection. Accordingly, THIS ACTION IS MADE FINAL. See M.P.E.P. §706.07(a).

A SHORTENED STATUTORY PERIOD FOR RESPONSE TO THIS FINAL ACTION IS SET TO EXPIRE THREE MONTHS FROM THE DATE OF THIS ACTION. IN THE EVENT A FIRST RESPONSE IS FILED WITHIN TWO MONTHS OF THE MAILING DATE OF THIS FINAL ACTION AND THE ADVISORY ACTION IS NOT MAILED UNTIL AFTER THE END OF THE THREE-MONTH SHORTENED STATUTORY PERIOD, THEN THE SHORTENED STATUTORY PERIOD WILL EXPIRE ON THE DATE THE ADVISORY ACTION IS MAILED, AND ANY EXTENSION FEE PURSUANT TO 37 C.F.R. §1.136(a) WILL BE CALCULATED FROM THE MAILING DATE OF THE ADVISORY ACTION. IN NO EVENT WILL THE STATUTORY PERIOD FOR RESPONSE EXPIRE LATER THAN SIX MONTHS FROM THE DATE OF THIS FINAL ACTION.

Registered practitioners can telephone examiner Prenty at (703) 308-4939. All other parties should telephone (703) 308-0956. The fax number is (703) 308-7722.

Mark Prenty

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